Discovery Research

In Vitro Biology Capabilities

Discovery Research
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Contents

In Vitro Biology

Expertise	A group of dedicated scientists with overall expertise in Biochemistry, Molecular Biology and Cell Biology
Drug target class	Encompassing drug target class: GPCRs, Nuclear Receptors, Monoamine transporters, ion channels and enzymes
Proficiency	Assay Development and Validation, Screening and Profiling of Compounds, and Diverse Mechanistic Studies of Lead/ Lead Like Molecules

Protein Expression, Purification and Interaction Services

Cloning And Expression

- Human cDNA Synthesis and Cloning
- Expression of Recombinant Proteins in *E. coli*, Baculovirus and Mammalian Cells.

Protein Purification

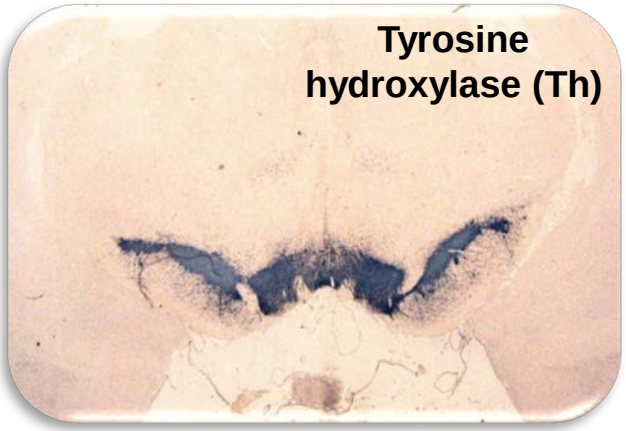
- Purification and Characterization of Recombinant Proteins using affinity tag

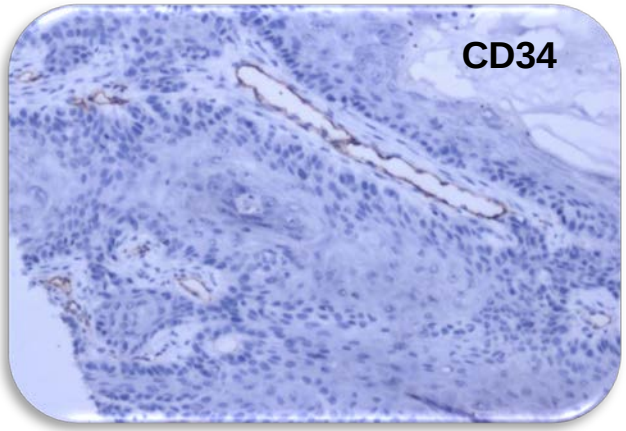
Protein – Protein Interactions

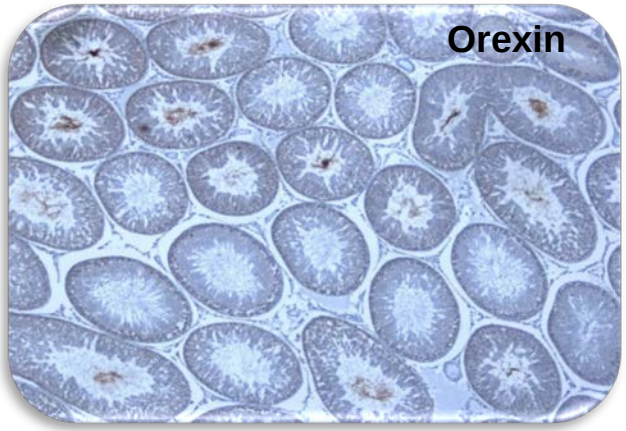
- Yeast Two-Hybrid System and other yeast based assays
- His Tag Pull Down

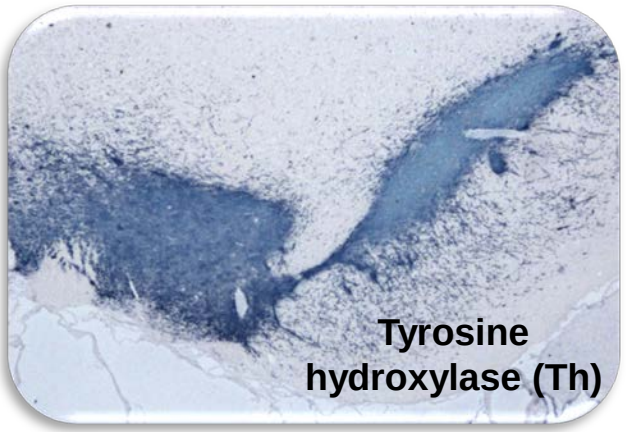
Protein Localization

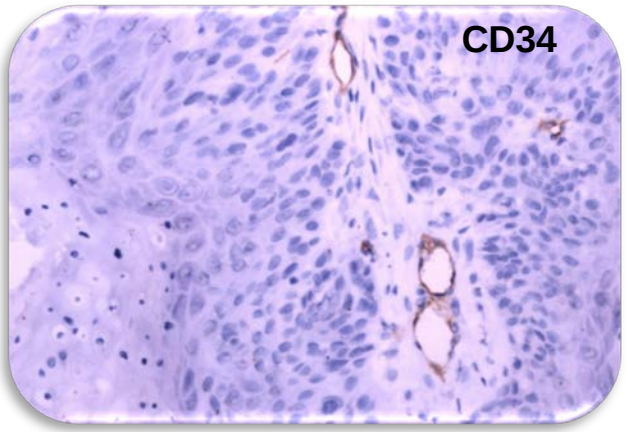
Protein Localization - Immunohistochemistry

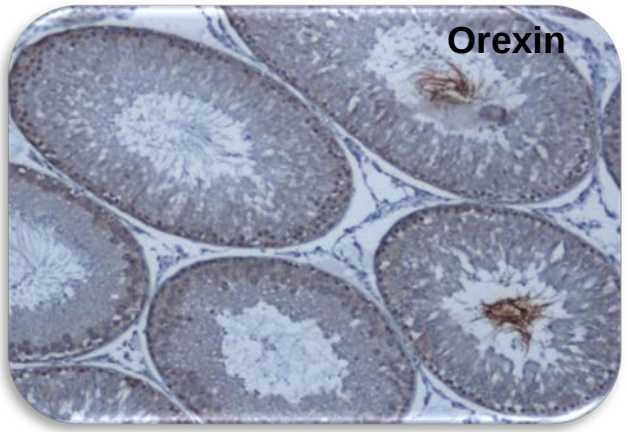












Cell line and cell culture

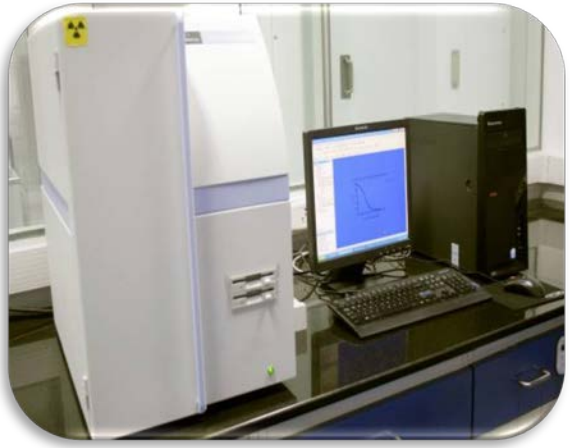
Cell Bank:

- CHO-K1, HEK293, IMR32, Caco-2, Sf9, HepG2, U-937, and PC12.

Recombinant stable cell line generation:

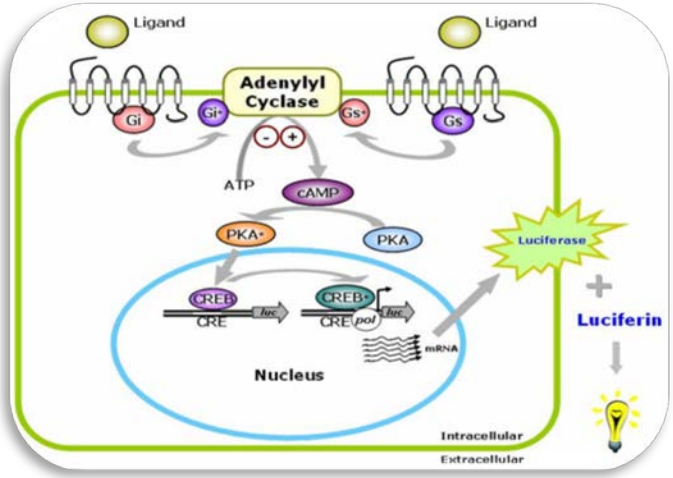
- Stable cell line are primary source for cell based assays and membrane proteins for binding assays.
- Recombinant stable cell lines were generated in CHO-K1/ HEK293 parent cell line using recombinant expression construct and CRE-Luc reporter by liposomal transfection.
- Pure clones were identified by single cell per well dilution.
- Validated using reference agonist and antagonist dose response.

Radio-ligand Binding Assays



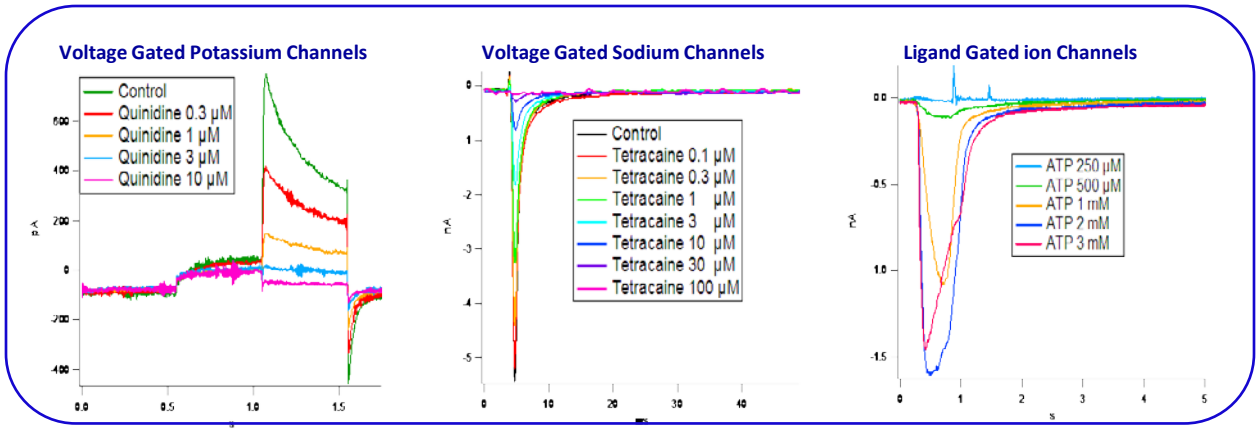
- Atomic Energy Regulatory Board of India (AERB) approved facility.
- Validated binding assays from target class GPCRs, Ion channels and Transporters
- Validated Functional uptake assays for monoamine transporters.
- Scintillation Proximity Assay (SPA) bead and filtration based platform.

Cell Based Assays



- Validated cell lines were used for screening compounds along with reference compounds in each plate.
- Luciferase reporter gene based assay was utilized to determine functionality of compounds representing various class with varying affinities.
- EC_{50}, IC_{50}, and K_b values were derived.
- Agonist, Antagonist and allosteric modulators can be identified.

In Vitro Electrophysiology Assays



- Versatile automated Patch clamp assays for both Voltage gated and Ligand gated ion channels using Nanion Patch clamp instrument.
- Patch clamp assays for temperature sensitive receptors like TRPV1, hERG etc can be measured at ideal temperatures with inbuilt temperature control system.
- Validated assays for safety profiling and screening therapeutic targets like pain and other CNS disorders.
- Voltage gated ion channels - Potassium channels **K_v 10.1(eag1), K_v 11.1(hERG);** Sodium channels **Na_v 1.4, Na_v 1.5, Na_v 1.6, Na_v 1.7.**
- Ligand gated ion channels - Purinergic receptors **P2X7**.

List of *In Vitro* Assays

Target	Assay Type
GPCRs	
Adenosine A_{2A}	Reporter gene Driven cell based
Adrenoceptor α_{1B}	Reporter gene Driven cell based/ Radioligand binding
Adrenoceptor α_{2C}	Reporter gene Driven cell based
Serotonin 5-HT_{1A}	Reporter gene Driven cell based/ Radioligand binding/ β-arrestin
Serotonin 5-HT_{2A}	Reporter gene Driven cell based/ Radioligand binding/ β-arrestin
Serotonin 5-HT_{2C}	Radioligand binding
Serotonin 5-HT_{4}	Reporter gene Driven cell based/ Radioligand binding
Serotonin 5-HT_{6}	Reporter gene Driven cell based
Serotonin 5-HT_{7}	Reporter gene Driven cell based/ Radioligand binding
Dopamine D_1	Reporter gene Driven cell based
Dopamine D_2	Reporter gene Driven cell based/ Radioligand binding/ β-arrestin
Dopamine D_3	Radioligand binding
Dopamine D_5	Reporter gene Driven cell based
Histamine H_1	Reporter gene Driven cell based/ Radioligand binding

List of *In Vitro* Assays

Target	Assay Type
GPCRs	
Histamine H_3	Reporter gene Driven cell based
Histamine H_4	Reporter gene Driven cell based/ Radioligand binding
Muscarinic M_1	Reporter gene Driven cell based/ Radioligand binding/ β-arrestin/ IP1 assay
Muscarinic M_2	Reporter gene Driven cell based/ Radioligand binding
Muscarinic M_3	Reporter gene Driven cell based/ Radioligand binding
Muscarinic M_4	Reporter gene Driven cell based/ Radioligand binding
Muscarinic M_5	Reporter gene Driven cell based/ Radioligand binding
Cannabinoid CB_1	Reporter gene Driven cell based
Cannabinoid CB_2	Reporter gene Driven cell based/ Radioligand binding
Prostaglandin EP2	Reporter gene Driven cell based
Transporters	
SERT	Radioligand binding/ Functional uptake
DOPT	Radioligand binding/ Functional uptake
NET	Radioligand binding/ Functional uptake

List of *In Vitro* Assays

Target	Assay Type
Nuclear receptors	
LXR alpha	Reporter gene Driven cell based
LXR beta	Reporter gene Driven cell based
RXR alpha	Reporter gene Driven cell based
PXR	Reporter gene Driven cell based
PPAR gamma	Reporter gene Driven cell based
Ion Channels	
Nicotinic α4β2	Radioligand binding
Serotonin 5-HT_3	Radioligand binding
Potassium K_v 10.1	Electrophysiology
Potassium K_v 11.1 (hERG)	Radioligand binding/ Electrophysiology
Sodium Na_v 1.4	Electrophysiology
Sodium Na_v 1.5	Electrophysiology
Sodium Na_v 1.6	Electrophysiology
Sodium Na_v 1.7	Electrophysiology
Purinergic P2X7	Electrophysiology

Suven Discovery

Quality Assurance

- Independent Quality Assurance team
- Quality System Procedures (QSP's) for Quality System Management and Standard Operating Procedures (SOP's) for Operation, Calibration, Maintenance of Equipment's
- Document and Data Control, Conducting Internal Audits, Study Specific Audits
- Dedicated Archive facility for the retention of the records
- Facility audited and approved by many global pharmaceutical companies and majority of Indian Pharma Companies

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